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Exchange model of proximity effect for F/S nanostructures

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Abstract

We propose the exchange model of proximity effect in the ferromagnetic insulator/superconductor/ferromagnetic insulator (F/S/F) trilayers. This model takes into account the long range antiferromagnetic indirect RKKY exchange between localized spins placed at the F/S boundaries through superconducting electrons of the S layers as well as direct ferromagnetic exchange of nearest neighbors in the F layers. We propose new control devices based on the three-layered F/S/F nanostructures and combining the advantages of the superconducting and magnetic data-record channels in a single sample. © 2006 American Institute of Physics.

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Keywords

Cryptoferromagnetism, Mutual accommodation, Proximity effect, Superconductivity